



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/696,051	10/25/2000	Kenneth R. Owens	4910.00011	4425
45149	7590	11/08/2005	EXAMINER	
TELLABS OPERATIONS, INC. LEGAL DEPARTMENT 1415 WEST DIEHL ROAD NAPERVILLE, IL 60563			PHUNKULH, BOB A	
			ART UNIT	PAPER NUMBER
			2661	

DATE MAILED: 11/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/696,051

Applicant(s)

OWENS ET AL.

Examiner

Bob A. Phunkulh

Art Unit

2661

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 02 September 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 6/13/2005.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

This communication is in response to applicant's 09/02/2005 amendment(s)/response(s) in the application of **Owens et al.** for "**Protection/Restoration of MPLS Networks**" filed 10/25/2000. The amendments/response to the claims have been entered. No claims have been canceled. No claims have been added. Claims 1-20 are now pending.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 3-5, 7-20 are rejected under 35 U.S.C. 102(e) as being anticipated by *Cao et al.* (US 6,721,269 ), hereinafter *Cao*.

Regarding claim 1, *Cao* discloses an multi-protocol label switching system (MPLS) having a working path over which data is carried from a source to a destination and further having a protection path over which data from the source to the destination w3can be carried, a method of initiating an MPLS protection path switch over from the working path to the protection path comprising the steps of:

Art Unit: 2661

-detecting a failure on the working path at a first switching node (a router along the path that first detects the failure) of the working path (routers along the path monitor the path and report the failure to source node col. 3 lines 39-46, and 48-51);

-transmitting a failure notification message from only a first switching node to at least a second, switching node of the working path (if a failure is detected, a router that first detects the failure propagates the physical level maintenance to the source and sink routers, col. 3 lines 48-51);

-routing data by at least one of the second switching node and a third switching node of the working path from the working path to the protection path upon the receipt of the failure notification message at least one of: the second switching node (the source router) and a third switching node of the working path, wherein the at least one of the second switching node and the third switching node is at an origin of both the working path and the protection path (in order to accommodate a failure in the newly selected path, the sink and source nodes may establish another path back to the source router to maintain the desired redundancy and the secondary (and ternary, etc.) path(s) may also be monitored for failure so that they may be replaced in the event of their failure, col. 2 lines 25-47).

Regarding claim 3, Cao discloses the failure notification message travels along a path through the MPLS system, extending between the destination and the source (the source router and sink router, see col. 3 lines 53-56).

Art Unit: 2661

Regarding claim 4, Cao discloses a multi-protocol label switching (MPLS) system protection switch comprising:

a first data input port into which MPLS data is received from a data source (the data source connected to LSRS not shown in figure 1);

a first data output port from which MPLS data is sent to a second MPLS switching system comprising an MPLS working path (path S-A-B-E, see claim 1 and col. 6 lines 12-23);

a second data output port from which MPLS data is sent to a third MPLS switching system comprising an MPLS protection path (path S-C-D-E, see claim 1 and col. 6 line 12-23);

a second data input port adapted to connect to a path that follows the MPLS working path for receiving failure notifications;

whereby data received at the data input port from the data source can be selectively routed from the second MPLS switching system to the third MPLS switching system by a node at an origin of both the MPLS working path and the MPLS protection path (the source and sink routers along the path having both working and protection paths and each router acts as an origin of both the MPLS working and protection path, see figure 1 and col. 3 lines 35-57).

Regarding claim 5, Cao discloses the MPLS switching system of claim 4 further comprising a control input port whereat protection path failure messages are received

Art Unit: 2661

from at least one the second MPLS switching system and the third MPLS switching system (see claim 1 and figure 1).

Regarding claim 7, Cao discloses the first switching node is upstream to the failure (LSRS, see figure 1 and col. 10 lines 21-41).

Regarding claim 8, Cao discloses the failure is an upstream failure and is detected by a node upstream to the failure (path S-A-B-E and detected by LSRA, see figure 1 and col. 10 lines 21-41).

Regarding claim 9, Cao disclose the failure is downlink failure and is detected by a node downlink to the failure (path S-A-B-E and detected by LSRB, see figure 1 and col. 10 lines 21-41).

Regarding claim 10, Cao disclose the failure is a bi-directional failure and is detected by a pair of nodes downlink and uplink to the failure (path S-A-B-E and detected by LSRS and LSRB, see figure 1 and col. 10 lines 21-41).

Regarding claim 12, Cao discloses a method for MPLS protection switching from a working path to a protection path comprising:

transmitting a failure notification to a protection switch node along a path that follow the working path (see col. 3 lines 41-57); and

routing data a the protection switch node from the working path to the protection path upon receipt of the failure notification, wherein the protection switch node is at an origin of the working path and the protection path (the source and sink routers along the path having both working and protection paths and each router acts as an origin of both the MPLS working and protection path, see figure 1 and col. 3 lines 35-57).

Regarding claim 13, Cao discloses the failure notification is transmitted in a direction reverse to the working path (see col. 10 lines 21-41).

Regarding claim 14, Cao discloses the path follows the protection path mirrors the working path (see figure 1).

Regarding claim 15, Cao discloses detecting a failure (see col. 3 lines 49-51).

Regarding claim 16, Cao discloses the first switching node is upstream to the failure (LSRS, see figure 1 and col. 10 lines 21-41).

Regarding claim 17, Cao discloses the failure is an upstream failure and is detected by a node upstream to the failure (path S-A-B-E and detected by LSRA, see figure 1 and col. 10 lines 21-41).

Art Unit: 2661

Regarding claim 18, Cao disclose the failure is downlink failure and is detected by a node downlink to the failure (path S-A-B-E and detected by LSRB, see figure 1 and col. 10 lines 21-41).

Regarding claim 19, Cao disclose the failure is a bi-directional failure and is detected by a pair of nodes downlink and uplink to the failure (path S-A-B-E and detected by LSRS and LSRB, see figure 1 and col. 10 lines 21-41).

Regarding claim 20, Cao disclose the failure is detected by a pair of nodes downlink and uplink to the failure (path S-A-B-E and detected by LSRS and LSRB, see figure 1 and col. 10 lines 21-41).

Claim 6 is rejected under 35 U.S.C. 102(e) as being anticipated by *Dantu* et al. (US 6,532,088), hereinafter *Dantu*.

Regarding claim 6, *Dantu* discloses a multi-protocol label switching (MPLS) system comprised of a first MPLS protection switch having a data input port into which MPLS data is received from a data source (the central network node, see figure 3);  
a second MPLS switching system coupled to said first MPLS protection switch via a first data path carrying MPLS data, said first data path comprising an MPLS working path (either network node 312 or 320, see figure 3);



Art Unit: 2661

a third MPLS switching system coupled to said first MPLS protection switch via a second data path capable of carrying MPLS data, said second data path comprising an MPLS protection path (either network node 312 or 320, see figure 3);

an upstream reverse notification tree (RNT) data path extending at least between said second MPLS switching system to said MPLS protection switch, that upon a failure can carry data by which in response to the failure a switchover from a working path to a protection path can be initiated (an overhead signaling message are generated and transmitted back to the ingress node identifying the fault condition so that the protection switching may occur quickly. The overhead signaling messages are transmitted by the nodes detecting the error on a communication link so that the ingress node may effectuate the change on quick basis, see col. 4 lines 8-21; and col. 9 lines 8-33 and figure 3).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cao in view of Omuro et al. (US 5,241,534), hereinafter *Omuro*.

Art Unit: 2661

Regarding claim 2, Cao fails to explicitly disclose that re-routing data from the protection path to the working path upon the determination that the failure on the working path has been corrected.

*Omuro*, on the other hand, teaches re-routing (change back) data from the protection path to the working path upon the determination that the failure on the working path has been corrected (see abstract).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention was made to implement the teaching of *Omuro* in the system taught by Cao in order to restore the original path upon the restoration the path –where the original path usually is cost efficient and shortest path.

### ***Response to Arguments***

Applicant's arguments filed 9/2/2005 have been fully considered but they are not persuasive.

In response to the applicant's argument in page 8, Cao discloses the following in col. 2 lines 25-47:

A router in accordance with the principles of the present invention may be employed to establish one or more circuit paths among a plurality of routers. Rather than establishing a hop-to-hop path in order to permit the transmission of signals along a circuit, a router in accordance with the principles of the invention operates as an explicitly routed line switched router (ERLSP) to establish a plurality of paths from a source (entry) router to a sink (destination) router. The paths are provisioned at the source router, through a network management system, for example, which may, in accordance with the principles of the present invention, ensure that the paths are disjoint. All of the new routers between the source and sink routers operate to establish the plurality of paths. In the event of a path failure, the sink router selects an operational one of the pre-established paths. Additionally, in order to accommodate a failure in the newly selected path, the sink and source nodes may establish another path back to the source router to maintain the desired redundancy and the secondary (and ternary, etc.) path(s) may also be monitored for failure so that they may be replaced in the event of their failure.

Art Unit: 2661

Therefore, *Cao* discloses routing data by a switch node (source node or router) of the working path, from the working path to the protection path upon receipt of a failure notification message at the switching node, wherein at least one of the switching node and the third switching node (sink node or router) is at an origin of both the working and protection paths.

In response to the applicant's argument for claim 6 in pages 10-11 *Dantu* disclose the following in col. 4 lines 8-21:

To accomplish fast switching, layer 1 overhead signaling messages are generated and transmitted back to the ingress node (among other nodes) identifying the fault condition so that the protection switching may occur quickly. More specifically, layer 1 overhead signaling messages are transmitted by the nodes detecting the error (typically the two nodes on either traffic side of the detected problem) on a communication link so that the ingress node may effectuate the change on a quick basis. Typically, the ingress node includes dedicated circuitry for reading, interpreting and quickly responding to the overhead signaling message to effectuate a change. As is implied by the foregoing discussion, the overhead signaling is set upon the occurrence of a significant hardware failure in a communication link.

Therefore, *Dantu* discloses an upstream reverse notification tree data path (overhead signaling messages transmit over the communication link) that follows the MPLS working path that upon a failure can carry a failure notification by which in response to the failure.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

Art Unit: 2661

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

**Any response to this action should be mailed to:**

The following address mail to be delivered by the United States Postal Service (USPS) only:

Mail Stop \_\_\_\_\_  
Commissioner for Patents  
P. O. Box 1450  
Alexandria, VA 22313-1450

**or faxed to:**

(703) 872-9306, (for formal communications intended for entry)

**Or:**

The following address mail to be delivered by other delivery services (Federal Express (Fed Ex), UPS, DHL, Laser, Action, Purolater, Hand Delivery, etc.) as follow:

U.S. Patent and Trademark Office  
220 20<sup>th</sup> Street South  
Customer Window, Mail Stop \_\_\_\_\_  
Crystal Plaza Two, Lobby, Room 1B03  
Arlington, VA 22202.

Art Unit: 2661

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Bob A. Phunkulh** whose telephone number is **(571) 272-3083**. The examiner can normally be reached on Monday-Tuesday from 8:00 A.M. to 5:00 P.M. (first week of the bi-week) and Monday-Friday (for second week of the bi-week).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor **Chau Nguyen**, can be reach on **(571) 272-3126**. The fax phone number for this group is **(571) 273-8300**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Bob A. Phunkulh  
Primary Examiner

TC 2600

Art Unit 2661

November 02, 2005

**BOB PHUNKULH**  
**PRIMARY EXAMINER**